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NOTES ON SOME BUPRESTIDAE OF NORTHERN CALIFORNIA.

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This paper is the result of two summers spent in Northern California. July and August, 1915, were spent at Weed, a small lumbering town in Siskiyou County, at the base of Mt. Shasta. The general elevation surrounding Weed is 4,500 feet. July and August and part of September, 1916, were spent in Siskiyou, Del Norte, Humboldt, and Mendocino Counties of California.

Dr. C. E. Van Dyke, of the University of California, has very kindly furnished me with his own notes on the hosts, etc., of species he has taken in the Northern part of his state. I wish, particularly, to express my indebtedness to Dr. Van Dyke for his notes on the genus Acmaeodera; practically all the information on that genus is due to his observations, since I have personally come in contact with but two species, A. vandykei and A. connexa.

Regarding the species taken at Weed, it might be well to mention that there are from 50 to 60 cars of logs brought in daily from the Trinity Mountains, some thirty miles distant. I am inclined to believe that the majority of the forest insects are brought in with this timber, though undoubtedly some are attracted from the surrounding territory by the smell of fresh pine.

Buprestids were by far the most numerous beetles

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around Weed and over 450 specimens were taken at odd times during a six weeks stay.

1. Chalcophora angulicollis Lec.

Twenty-six specimens of this species were taken at Weed in 1915. The majority were captured while resting in the bright sunshine, on buildings, telephone poles, on the wooden side walks and a few were taken in flight. They attract attention by the rasping sound they make in flight and are easily captured in the hand. They seem to be attracted by moving objects and will often light on horses, moving wagons, or on man. No less than ten specimens were taken on piled lumber. It is common all over the northern half of the state, breeds in Yellow Pine, Douglas fir, White or Grand fir.

2. Dicerca prolongata Lec.

Dr. Van Dyke has captured this species on Populus trichocarpa in Trinity County, California, and on Populus tremuloides at Lake Tahoe. It breeds in P. trichocarpa and doubtless in P. tremuloides also.

3. Dicerca sexulis Cr.

This one of the handsomest species of the genus and is found throughout the northern part of the state. I have taken it from Douglas fir, which seems to be its principal host plant, also from Yellow Pine. Dr. Van Dyke has taken it from Knobcone Pine at McCloud, In July, 1914. At

an elevation of 3,500 feet in the Santiam National Forest of Oregon, I have taken specimens emerging on April 4th.

4. Dicerca tenebrosa Kirby.

Of this species Dr. Van Dyke writes as follows, "Have found the western phase of this species about Fallen Leaf Lake, Lake Tahoe, in July, 1915, on dead lodgepole pine, in which it no doubt breeds. It probably extends south through the Cascade-Sierra range in the lodgepole pine belt." I have never encountered this species in California but in the Blue Mountains of eastern Oregon it is the most common member of the genus and breeds in both Pinus ponderosa and P. contorta.

5. Dicerca hornii Cr.

This species breeds in Alnus and Ceanothus in most counties of Northern California. It is quite common locally at certain periods.

6. Dicerca pecterosa Lec.

This rare species was taken by Dr. Van Dyke at Lake Tahoe in July, 1915. In Oregon it breeds in Peach, and I have taken it on lodgepole pine in Grant Co.

7. Trachykele opulenta Fall.

I quote from Dr. Van Dyke on the two species of this genus: "A number of specimens were beaten from the alpine juniper on the ridge above Lake Tahoe, during July,

1915, by Ralph Hopping and myself. Found borings in dead juniper which were no doubt due to this species. I believe that it also lives in most other western cupressine trees." A dead specimen removed from its pupal cell in Libocedrus decurrens, Oct. 1916, Santiam Forest, Ore.

8. Trachykele nebulosa Fall.

"One specimen taken at Carrville, Trinity County, California, in July, 1913. Others were taken about Lake Tahoe from Abies concolor by Hopping and Van Duzie. It breeds in Abies concolor and A. magnifica as specimens have been taken emerging." Both species of this genus undoubtedly occur in favorable localities throughout the northern part of the State. It has been taken at Corvallis, Oregon and also in Western Washington.

9. Poecilonata cyanipes var. ferrea Mels.

This species is found throughout the northern part of the state and breeds in all the poplars and willows. I have dug adults from P. tremuloides and P. trichocarpa in Humboldt County.

10. Buprestis Gibbsii Lec.

Not common; found occasionally on oak. One specimen taken at Garbervill, Humboldt County, California, August, 1916.

11. Buprestis connexa Horn.

This rare and beautiful species is never found

in numbers in any locality. Three specimens were captured and a fourth was seen at Weed. The first specimen was taken July 18 from the sapwood of Yellow Pine, (P. ponderosa), fully mature and would doubtless have emerged in a few days. The gallery traversed through the cambium for some distance, winding around in a very irregular pattern, then entered the sapwood to a depth of two inches. The pupal cell was just in the sapwood. The second specimen was taken on the 28th of July resting on the foliage of Yellow Pine with numbers of B. rusticorum. The last specimen was found embedded in pitch on the end of a Yellow Pine log.

12. Buprestis laeviventris Lec.

This was the most numerous species encountered. Out of 116 specimens taken only eight were taken on the freshly cut logs. They seem to have a preference for old dry logs and poles without bark. Many were taken on railroad ties and in the road. This is the only species I have ever encountered which deposits its eggs in or on logs where there is no bark. I observed one individual deposit eggs in the weather checks in the end of an old dry log. How the young larvae were to enter a seasoned pine log, and live, is a mystery but the eggs were seen deposited and they are now in my possession. On another occasion a female deposited her eggs in a small check on the side of a pine log. The place selected was destitute

of bark but less than six inches away the bark was still on the log.

The specimens taken show a large variety of patterns on the elytra, varying from a few faint spots of yellow on the black back ground, to great splotches which cover over one-half the surface. The basic color varies from a shiny black to an irridescent green. The length ranges from 15 mm. to 23.5 mm.

13. Buprestis rusticorum Kirby.

This species was found rather abundant in certain situations. Out of 79 specimens taken, 63 were taken feeding on the needles of Pinus ponderosa. Many were copulating during August and were easily captured by holding a cyanide bottle, or any receptacle under them and jarring the limb or twig. When thus disturbed they fold their legs and drop to the ground. It is not easy to detect them here as they immediately crawl into the grass, under twigs, rock, or into any hiding place. Another favorite resting place is the sawdust fills. Many were observed crawling around through the coarse sawdust and debris. Breeds in Yellow Pine and Douglas fir, and occurs in all the northern counties.

14. Buprestis langii Mann.

A single specimen was taken in flight, July 7, 1915. This is the female of B. fasciata; Dr. Van Dyke has

authentic records of this species being dug from its pupal cells in Douglas fir. It is very probable that it also breeds in Yellow Pine. They are often seen on the bright green leaves of the poplars and willows, seeking these resting places because of the protection they afford.

15. Buprestis lauta Lec.

Probably one of the commonest species from Canada to Southern California. This species breeds in Douglas fir, Yellow, lodgepole, sugar and Monterey Pine and western red cedar. The last named host is an Oregon record. I dug an adult male from a fallen Thuja plicata in the Coast Mountains in April, 1914.

16. Buprestis adjecta.

One taken on an electric light pole, July 20, 1915, at Weed.

17. Melanophila consputa Lec.

This species was very numerous and caused considerable annoyance to the men employed about the mill pond, by lighting on the neck, hands, and arms, and biting. Most of the 78 specimens gathered were taken resting on the logs floating in the mill pond, though some were secured from the stacks of cordwood. A most variable species; in markings it varies from solid black to dull bronze and may have from two to fourteen bright or dull yellow spots on the elytra. In

size it ranges from 4.5 mm. to 14.75 mm. in length, and from 2 mm. to 5.4 mm. in width. The females are larger than the males as in most species of the family. Breeds in yellow pine.

18. Melanophila longipes Say (acouminata De G.)

Twenty-four specimens of this species were taken about the log pond. They were even more of a nuisance than M. consputa. Their bite is not just what one would call agreeable and they cause considerable profanity to float out on the otherwise pure air. Breeds in Yellow Pine, Douglas fir, and the true firs (Abies).

19. Melanophila autropurpurea Say.

I have assigned thirteen specimens, taken at Weed, to this species. I must confess, however, that the difference existing between M. longipes, M. acuminata, and M. autropurpurea, is almost nil in my judgment. The separation I have made is based on the shape of the prothorax and the difference here grades from one extreme to the other until it is a mere guess where one species stops and another starts.

Statements under M. longipes apply to the species also.

20. Melanophila drummondi.

Less common in California than in Oregon. Breeds freshly in Douglas fir, Grand fir (Abies grandis) and to some extent in Yellow Pine. Found in all the northern counties.

21. Melanophila gentilis Lec.

This beautiful species was not uncommon, but was rather more active than any of the others and a capture of two specimens out of every five was a good record. Thirty-six specimens were taken, fully one-half of these were taken from the bark or debris on the cars after the logs were unloaded. This species like Chalophora angulicollis will rest immovable for hours where they are exposed to the direct rays of the boiling sunshine. In cloudy weather neither species is seen. I find my specimens collected in California are slightly larger and not as bright in color as specimens collected by Professor Wickham in Arizona. Breeds in Yellow Pine. Ralph Hopping states it also breeds in P. lambertiana.

22. Melanophila

A peculiar Melanophila which Dr. Van Dyke believes is a western form of M. pini-edulis Burke; was taken by him at Carrville, Trinity County, California, in July, 1913, and at McCloud, Siskiyou Co., in July, 1914 on yellow pine.

23. Anthaxia aeneogaster Lap.

Three specimens of this tiny Buprestid were secured. A pair in copulation were taken on the flowers of the Pearly Everlasting (Antennasia sp.?) and a single female on the dandelion (Toraxacum officinale Web.). Dr. Van Dyke has reared specimens from the following hosts: Redwood and

Knobcone pine, and I have reared it from lodgepole pine. It undoubtedly breeds in Yellow Pine, and has been reported from certain broad-leaf trees.

24. Anthaxia deleta Lec.

Dr. Van Dyke finds this species common about willows at times. Across the line in Oregon it is taken commonly on blossoms in the Yellow Pine belt.

25. Anthaxia sublaeirs Van Dyke.

One specimen taken in Siskiyou County, and others in Tuolumne County , California.

26. Chrysobothris femorata Fab.

Found throughout the state on Oak.

27. Chrysobothris contigua Lec.

This little Chrysobothris was not at all common, five specimens were taken on Yellow Pine slab-wood. They are decidedly more active than most of the other members of this genus. Breeds in smaller limbs of Yellow Pine.

28. Chrysobothris dentipes Germ.

Doctor Horn in his monograph mentions the fact that he has never seen this species from California. I believe it is common in the northern half of the state. Its large size attracts attention at once. Though only 8 specimens were captured at Weed, many more were seen but unfortunately they were observed at times when it was impossible

to capture them. Breeds in P. ponderosa.

29. Chrysobothris californica Lec.

Dr. Van Dyke gives me the following information concerning this species: "Our specimen, Castella, California, (in Blaisdell collection) and two from Nevada County, California (Van Dyke collection); nothing is known of the biology of this rare species.

30. Chrysobothris caurina Horn.

This was by far the most common species of the genus found during the summer. Forty-six specimens were taken. They are very uniform in color and sculpture. Most of the specimens were taken on logs floating in the mill pond. Dr. Van Dyke says of this species, "Probably the most common Yellow Pine Chrysobothris we have in northern California and eastern Oregon. Farther south in California it becomes scarcer, its place being taken by C. monticolae Fall. Undoubtedly breeds in Yellow Pine."

31. Chrysobothris monticolae Fall.

The species has a more delicate color than most of our other western species. It tends towards a lilac, sometimes hinting at a rose tint and in nature has more or less of a white powdery coating which, however, is easily removed by careless handling. Two specimens. July and August.

Weed is about 200 miles northwest of Lake

Tahoe, which is the most northern point hitherto recorded for this species.

32. Chrysobothris dolata Horn.

Two females were taken at Weed in July. Four specimens of this species were taken in Grant County, Oregon in July, 1914, three are females and the fourth a male. A close study of the six specimens at my disposal shows a wide variation and may possibly include more than one species. The five females exhibit four different forms which will be more readily understood from the figures of Plate I than from a printed description. Figure I is the clypeus of var. A., Fig. 1a is the thorax of the same specimen; 2 and 2a are clypeus and thorax of var. B, etc. Aside from the variation in clypeus and thorax there is little difference in the specimens. The antennae of one and four are dark cuperous, while two and three are green; one shows no collosites on the front, one and three are not as densely pubescent as two and four. All show about the same sculpture and all are of an irridescent violet color beneath. The prosternum of number four is a little more coarsely and deeply punctured than the others. Numbers two and four are from Eastern Oregon, while numbers one and three are from Weed, California.

As far as I am aware there has never been pub-

lished a description of the male of C. dolata, which I believe is almost unknown. The following description is made from a single male collected by the author in the Blue Mountains of Eastern Oregon, July, 1914. Male C. dolata has the general appearance of the female as described by Horn. Thorax a little more angulated. Color beneath irridescent, reddish purple, antennae dark purple basal points slightly greenish, much heavier and with less taper than the female and the last four joints have a squarish appearance, third joint about as long as next two, not longer. Front, as described by Horn, slightly pubescent, clypeus with a triangularly oval emargination at middle arcuate on each side. (This is exactly as Horn describes the female - I find that the clypeus of the females vary considerably in all specimens I have seen but is usually as shown in fig. 1 or 2 plate I. Thorax more angulated than one would surmise from Horn's description, though fitting his figure admirably; two depressions each side of middle and a third one near the margin, center (I fail to find the crescentic or oblique depressions of Dr. Horn) coarsely punctured, the punctures running together transversely, giving a strigilated appearance. Elytra same as female -- prosterum not lobed, coarsely and closely punctate, margin of last ventral (Fig. 5, Plate I) serrate; tip deeply, semi-circularly emarginate, the emargination deeper than wide. Anterior tibia dilated at end

as shown in Fig. 6, Plate I. Length 13 mm. A single male taken in Grant County, Oregon, July 21, 1914, on lodgepole pine (P. contorta). This species probably breeds in P. contorta, P. lambertiana and P. ponderosa.

33. Chrysobothris pseudotsugae Van Dyke.

One specimen taken in August. This species bears a close resemblance to C. caurina but is smaller, and darker. The prosternum being lobed will at once separate it from caurina. Taken on (Abies grandis) Grand fir at Weed, August 11, 1915, also collected in numbers from Douglas fir near Corvallis, Oregon, March, 1916. Breeds in Pseudotsugae and Abies.

34. Chrysobothris nixa.

This species is fairly common in Northern California and ranges over into the southwestern portion of Oregon. Breeds as far as known only in Incense Cedar (Libocedrus decurrens).

35. Chrysobothris viridicyanea Horn.

This beautiful green species breeds in the limbs and smaller branches of Libocedrus decurrens and is found in most of the northern counties of the state. The following counties are represented in Dr. Van Dyke's collection: Trinity, Siskiyou and Placer. I have two specimens from Siskiyou County.

36. Chrysobothris sylvania Fall.

The type material was collected from apple in northern Sonoma County, California. Mr. Nuneumacher of Oakland has taken in Del Norte County. I have collected it in the Cascades of southern and central Oregon.

37. Chrysobothris mali Horn.

Occurs throughout California where it breeds in cherry and willow. In Oregon the writer has bred it from prune, peach and apple.

38. Chrysobothris pubrescous Fall.

I have a single specimen of this species taken in Southern Oregon. Dr. Van Dyke states that in California it is generally confined to the Sierras. He has taken it at Lake Tahoe and in Shasta County. There are specimens in his collection from Reno, Nevada and from Tulare County, California. It probably breeds in the smaller limbs of Jeffrey and Yellow Pine.

39. Chrysobothris deleta Horn.

This is not a typically northern species but does occur at rare intervals as shown by a specimen from Lake Tahoe and one from Castella, Shasta County, July 8, 1912, (in the Van Dyke collection).

40. Chrysobothris cyanella Horn.

This species although rare is rather widely distributed throughout the Cascade-Sierra region. The writer

has taken specimens in the vicinity of Ashland, Oregon (just over the California line). It undoubtedly breeds in the twigs of Yellow Pine. In the Van Dyke collection there are specimens taken in Shasta County, Siskiyou County, and Lake Tahoe, California.

41. Chrysobothris prasina Horn.

The type of this species is supposed to have been collected in Northern California. Dr. Van Dyke has one specimen taken in Sonoma County, June 30, 1912.

42. Polycesta californica Lec.

Found throughout the oak region of California though never common. It has been taken from dead black oak (Quercus kelloggii) in Trinity County, Yosemite Valley, and Mariposa County (Van Dyke collection).

43. Chrysophana placida Lec.

Found throughout the coniferous area of Northern California and the Sierras, also well distributed over Western Oregon, and no doubt extends into Washington, since the writer has taken it 35 miles south of the Columbia River. Dr. Van Dyke has one specimen bred from the cones of P. ponderosa. Mr. Miller of the Ashland Station has bred it from the cones of Pinus attenuata. Its common host plant is Douglas fir, but it also breeds in the upper part of small lodgepole, yellow and knobcone pine.

There are three phases, a striped phase which

is the more common and is often taken in open fields on flowers in Southern Oregon; an all green variety which occurs at higher elevations of the middle and southern Sierras. The writer has taken this variety at Corvallis, Oregon. The third variety is scarce and unstriped; or a dark bronze or black color.

44. Acmaeodora angelica Fall.

Generally to be found flying about brush or in the flowers of Yerba Santa, Erydectylon. Very common in the Sierra Madra range of Southern California, but also extends northward. I have specimens from the following more northern localities: Mariposa County, Lake County, and Lake Tahoe.

45. A. hepburnii Lec.

Very common in most parts of California. Generally to be taken in flowers such as certain compositae like Baeria and in the flowers of the evening primrose.

46. A. acuta Lec.

Perhaps even more common than the preceding and found in similar places, also as widely distributed. There are two phases, the common one where the markings are broken up and the other where definite stripes are formed.

47. A. connexa Lec.

Probably the most common species which we have in the state and widely distributed. Usually found in flowers like the preceding two. I have also dug it out of its pupae

chambers from dead branches of oak, Quercus wislizenii, in Marin County, California.

48. A. labyrinthica Fall.

This is generally a species of Southern California. I, however, have specimens from Castella, July, 1912, and from Tuolumne County.

49. A. plagiaticauda Horn.

Found throughout the Sierras but rare. One specimen has been seen from Siskiyou County, California, and another from Lake Tahoe.

50. A. variegata Lec.

This Rocky Mountain and Great Basin species courses into California through the gaps in the mountains north of Mt. Shasta. I have beaten specimens from the branches of dead Yellow Pine at Carrville, Trinity County, California, during June , 1913. I believe that it breeds in Yellow Pine.

51. Acmaeodera vandykei Fall.

Found throughout the northern and middle Sierras. It breeds in Ceanothus. I have specimens from McCloud, July, 1914; Sisson, July 5, 1900 (Type material); Shasta County; and Mariposa County.

52. A. mariposa Horn.

A species of the middle and southern Sierras. I, however, have specimens from Sonoma County and Lake Tahoe

and it no doubt extends further north.

53. A. dolorosa Fall.

A southern species. I have specimens from Lake and Mariposa Counties, and it probably extends much farther north.

54. A. hornii Fall.

Of this Arizona species, I have seen what I consider typical specimens of from near Placerville, El Dorado County, July, 1906, as well as from Mt. San Jacinto in Southern California. I have also seen a phase in which the marginal patch of yellow is broken up into large blotches (otherwise not different) from near Placerville, Siskiyou County, and from Tuolumne County.

55. Acmaeodera gemina Horn.

This species is widely distributed in the state though nowhere common. It is generally to be found resting on twigs or in flowers, such as those of the wild buckwheat, Eriogonum. I have specimens from Mariposa and Eldorado Counties, and have seen them from much farther to the north. There are two fairly distinct phases, the var. nobulosa Horn, in which the markings are much broken up and the typical form in which the markings are of a lineate type. These phases, however, mate indiscriminately and may be found in the same territory.

56. Agrilus politus Say.

Abundant throughout the West. Chiefly found on willow in which it breeds, but also on live oak, the fine twigs of which it often prunes, the larvae girdling the twig within the bark. There is a blue phase (perhaps a distinct specie) which seems to be confined to the alder.

57. A. vittaticollis Rand.

One specimen taken by F. W. Nuneumacher in Josephine County, Oregon, May 8, 1910, and two by myself at Carrville, Trinity County, California, July 1, 1913, on willow.

58. A. walsinghami Cr.

Type locality Yreka, California. Others have been taken in same region; also in Inyo County, California. It breeds in one of the desert shrubs.

59. Agrilus nevadensis Horn.

Western Nevada Type locality. I have specimens from the Yosemite collected on poplar. It may possibly extend farther north.

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